KINGSBOROUGH COMMUNITY COLLEGE The City University of New York

CURRICULUM TRANSMITTAL COVER PAGE

partment: <u>Mathematics & Comput</u>	ter Science Date: March 23, 2017
le Of Course Or Degree: MAT 0050	00 – Introduction to Mathematical Thought
Change(s) Initiated: (Please check	()
☐ Closing of Degree	☐ Change in Degree or Certificate Requirements
☐ Closing of Certificate	☐ Change in Degree Requirements (adding concentration)
☐ New Certificate Proposal	☐ Change in Pre/Co-Requisite
☐ New Degree Proposal	☐ Change in Course Designation
☑ New Course	☐ Change in Course Description
☐ New 82 Course	☐ Change in Course Title, Numbers Credit and/or Hour
☐ Deletion of Course	☐ Change in Academic Policy
	☐ Pathways Submission:
	☐ Life and Physical Science
	☐ Math and Quantitative Reasoning
	☐ A. World Cultures and Global Issues
	☐ B. U.S. Experience in its Diversity
	☐ C. Creative Expression
	☐ D. Individual and Society
	☐ E. Scientific World
☐ Other (please describe):	
PLEASE ATTACH MATERIAL TO IL	LUSTRATE AND EXPLAIN ALL CHANGES
DEPARTMENTAL ACTION	
Action by Department and/or De	partmental Committee, if required:
Date Approved: <u>03/21/2017</u> Sign	nature, Committee Chairperson:
I have reviewed the attached mat	terial/proposal
Signature, Department Chairpers	son: Ria Yous
Revised/Dec.2015/AK	1

Revised/Dec.2015/AK



TO:

Spring 2017 Curriculum Committee

FROM:

Department of Mathematics & Computer Science

DATE:

March 21, 2017

RE:

New Course: Introduction to Mathematical Thought (MAT-00500)

The Department of Mathematics & Computer Science is proposing a new course:

Rationale for Change: The University has requested that the community colleges offer a credit-bearing course in fulfillment of the pathways requirement for Mathematical & Quantitative Reasoning for non-STEM majors who have demonstrated competency in Arithmetic but have failed to demonstrate competency in Elementary Algebra. The Kingsborough Community College Department of Mathematics proposes MAT 00500 in fulfillment of this mandate.

KINGSBOROUGH COMMUNITY COLLEGE THE CITY UNIVERSITY OF NEW YORK

NEW COURSE PROPOSAL FORM

1.	DEPARTMENT, COURSE NUMBER, AND TITLE (SPEAK TO ACADEMIC SCHEDULING FOR NEW COURSE NUMBER ASSIGNMENT): Department of Mathematics & Computer Science, MAT 00500 Introduction to Mathematical Thought				
2.	DOES THIS COURSE MEET A GENERAL EDUCATION/CUNY CORE CATEGORY? Life and Physical Science X Math and Quantitative Reasoning				
	A. World B. U.S. Ex C. Creati	Cultures and Global Issues xperience in its Diversity ve Expression lual and Society			
		PLETE AND SUBMIT WITH THIS PROPOSAL A CUNY COMMON CORE SUBMISSION se see attachment.)			
3.	DEGREE COU	W THIS COURSE TRANSFERS (REQUIRED FOR A.S. DEGREE COURSE). IF A.A.S. RSE AND DOES NOT TRANSFER, JUSTIFY ROLE OF COURSE, E.G. DESCRIBE OTHER JECTIVES MET:			
	Preliminary indications are that students will receive transfer credit for:				
	Other CUNY	Math 18000-Quantative Reasoning. Colleges: Potential CUNY Pathways courses fulfilling the Required natical and Quantitative Reasoning requirement.			
4.	BULLETIN DESCRIPTION OF COURSE: This course emphasizes quantitative reasoning skills finformed citizens to understand the world around them. Topics include basic probability, data analysis, solution of elementary Algebraic equations, word problems and modeling from data				
5.	CREDITS ANI	O HOURS* (PLEASE CHECK <u>ONE</u> APPROPRIATE BOX BELOW BASED ON CREDITS):			
	1-credit:	☐ 1 hour lecture ☐ 2 hours lab/field/gym			
	2-credits:	☐ 2 hours lecture ☐ 1 hour lecture, 2 hours lab/field ☐ 4 hours lab/field			
	3-credits:	□ 3 hours lecture □ 2 hours lecture, 2 hours lab/field □ 1 hour lecture, 4 hours lab/field □ 6 hours lab/field			
	3-credits, 3	hours, plus 4-equated credits, 4 hours, total of 7 hours			

4-credits:	4-credits: ☐ 4 hours lecture ☐ 3 hours lecture, 2 hours lab/field ☐ 2 hours lecture, 4 hours lab/field ☐ 1 hour lecture, 6 hours lab/field ☐ 8 hours lab/field			
More than 4-	credits: Number of credits: (explain mix lecture/lab below) Lecture Lab			
Explanation: Course emphasizes basic quantitative reasoning skills as well as develops the necessary mathematical background in order to master these skills, hence the extended hours.				

*Hours are hours per week in a typical 12-week semester

Number of equated credits in item #5: 4

- 6. COURSE PREREQUISITES AND COREQUISITES (IF NONE PLEASE INDICATE FOR EACH)
 - A. Prerequisite(s): Open to all students who meet one of the following requirements:
 - (1) Score of 40-56 on the Elementary Algebra portion of the Accuplacer exam
 - (2) Passed MAT M1
 - (3) Passed a Mathematics Department workshop culminating in the Departmental M1 final exam
 - **B.** COREQUISITE(S): None.
 - C. Pre/Corequisite(s): None.
- 7. Brief Rationale to justify proposed course to include:
 - A. ENROLLMENT SUMMARY IF PREVIOUSLY OFFERED AS AN 82 (INCLUDE COMPLETE 4-DIGIT 82 COURSE NUMBER)
 - B. PROJECTED ENROLLMENT
 - C. SUGGESTED CLASS LIMITS
 - D. FREQUENCY COURSE IS LIKELY TO BE OFFERED
 - E. ROLE OF COURSE IN DEPARTMENT'S CURRICULUM AND COLLEGE'S MISSION
- A. 50-90 students, initial enrollment.
- B. Class size limited to 28 students.
- C. Course will be offered every term.
- D. Mathematics 5 is designed to provide non-mathematics, non-science major students with an understanding of the role of mathematics in today's society.
- 8. LIST COURSE(S), IF ANY, TO BE WITHDRAWN WHEN COURSE IS ADOPTED (NOTE THIS IS NOT THE SAME AS DELETING A COURSE): None.
- 9. IF COURSE IS AN INTERNSHIP, INDEPENDENT STUDY, OR THE LIKE, PROVIDE AN EXPLANATION AS TO HOW THE STUDENT WILL EARN THE CREDITS AWARDED. THE CREDITS AWARDED SHOULD BE CONSISTENT WITH STUDENT EFFORTS REQUIRED IN A TRADITIONAL CLASSROOM SETTING: Does not apply.

10. PROPOSED TEXT BOOK(S) AND/OR OTHER REQUIRED INSTRUCTIONAL MATERIAL(S):

Robert Blitzer, *Thinking Mathematically*, 6th Edition, Prentice Hall/Pearson Publishing, 2015.

11. REQUIRED COURSE FOR MAJOR OR AREA OF CONCENTRATION? No.

IF YES, COURSE IS REQUIRED, SUBMIT A SEPARATE CURRICULUM TRANSMITTAL COVER PAGE INDICATING A "CHANGE IN DEGREE OR CERTIFICATE REQUIREMENTS" AS WELL AS A PROPOSAL THAT MUST INCLUDE A RATIONALE AND THE FOLLOWING ADDITIONAL PAGES: A "Current" Degree with all proposed deletions (strikeouts) and additions (bolded text) clearly indicated, and a "Proposed" Degree, which displays the degree as it will appear in the catalog (for a copy of the most up-to-date degree/certificate requirements contact Amanda Kalin, ext. 4611).

NYSED GUIDELINES OF 45 CREDITS OF LIBERAL ARTS COURSE WORK FOR AN ASSOCIATE OF ARTS DEGREE (A.A.), 30 CREDITS FOR AND ASSOCIATE OF SCIENCE DEGREE (A.S.), AND 20 CREDITS FOR AN APPLIED ASSOCIATE OF SCIENCE DEGREE (A.A.S.) MUST BE ADHERED TO FOR ALL 60 CREDIT PROGRAMS.

13. IF OPEN ONLY TO SELECTED STUDENTS SPECIFY POPULATION:

Open to students who satisfy the prerequisite (See 7A above)

14. EXPLAIN WHAT STUDENTS WILL KNOW AND BE ABLE TO DO UPON COMPLETION OF COURSE:

Students will be able to evaluate solutions to problems for reasonableness using a variety of means, including estimation. Students will learn effective communication of quantitative analysis or solutions to mathematical problems. Students will have the basic knowledge of the usage of algebraic numerical, graphical, or statistical methods to draw accurate conclusions and solve mathematical problems. Students will understand the fundamentals of statistics. Students will know how to represent quantitative problems. Students will understand the principles of mathematical modeling. Students will understand the application of mathematical methods to problems in other fields of study.

15. METHODS OF TEACHING –E.G. LECTURES, LABORATORIES, AND OTHER ASSIGNMENTS FOR STUDENTS, INCLUDING ANY OF THE FOLLOWING: DEMONSTRATIONS, GROUP WORK, WEBSITE OR E-MAIL INTERACTIONS AND/OR ASSIGNMENTS, PRACTICE IN APPLICATION OF SKILLS, ETC.:

Mathematics 5 is taught by classroom lecture and demonstration of specific mathematical concepts, operations, and procedures, combined with homework assignments designed to improve and solidify student understanding and mastery of these concepts, operations and procedures.

- **16. ASSIGNMENTS TO STUDENTS:** Assignments are taken from the textbook, and are chosen at the discretion of the instructor.
- 17. DESCRIBE METHOD OF EVALUATING LEARNING SPECIFIED IN #15 INCLUDE PERCENTAGE BREAKDOWN FOR GRADING. IF A <u>DEVELOPMENTAL COURSE</u> INCLUDE HOW THE NEXT LEVEL COURSE IS DETERMINED AS WELL AS NEXT LEVEL PLACEMENT.

Evaluation is based upon regular classroom examinations and a final examination. The instructor will administer a final exam that will constitute 40% of the final grade. The remaining 60% is to be divided between in-class tests, homework, and class participation at the discretion of the instructor. A final weighted average of 60% or better will be deemed sufficient to pass the course.

18. TOPICAL COURSE OUTLINE FOR THE 12 WEEK SEMESTER:

Hours	Topics	Text Sections
1	Basic Set Concepts	2.1
1	Subsets	2.2
1	Venn Diagrams and Set Operations	2.3
2	Set Operations and Venn Diagrams with Three Sets	2.4
4	The integers; Order of Operations	5.2
2	Algebraic Expressions and Formulas	6.1
3	Linear Equations in One Variable and Proportions	6.2
1	Applications of Linear Equations	6.3
1	Measuring Length: The Metric System	9.1
	Measuring Weight and Temperature	9.3
2 .	Measuring Area and Volume	9.2
2	Linear Inequalities in One Variable	6.4
4	The Irrational Numbers	5.4
2	Exponents and Scientific Notation	5.6
2	Percent, Sales Tax, and Discounts	8.1
_	Exponents and Scientific Notation	5.6
3	Simple Interest	8.3
	Compound Interest	8.4
2	Annuities, Methods of Savings, and Investments	8.5
4	Quadratic Equations	6.5
4	Sampling, Frequency Distributions, and Graphs	12.1
2	Scatter Plots, Correlation, and Regression Lines	12.6
2	Measures of Central Tendency	12.2
_	The Normal Distribution	12.4
2	Measures of Dispersion	12.3
4	The Normal Distribution	12.4
1	Graphing and Functions	7.1
4	Linear Functions and Their Graphs	7.2
1	Systems of Linear Equations in Two Variables	7.3
7	The Fundamental Counting Principle	11.1
	Fundamentals of Probability	11.4
	Events Involving Not and Or; Odds	11.6
	Events Involving And; Conditional Probability	11.7
4	Permutations	11.2
	Combinations	11.3
2	Expected Value	11.8
2	Modeling Data; Exponential, Logarithmic, and Quadratic Functions	7.6
1	Graphs, Paths, and Circuits	14.1
1	Euler Paths and Euler Circuits	14.2
1	Hamilton Paths and Hamilton Circuits	14.3
1	Trees	14.4
9	Tests and Reviews	

19. SELECTED BIBLIOGRAPHY AND SOURCE MATERIALS:

- 1) Bennet, *Using and Understanding Mathematics: A Quantitative Reasoning Approach*, 6th Edition, Pearson, 2014.
- 2) Aufmann, *Mathematical Thinking and Quantitative Reasoning*, 1st Edition, Cengage Learning, 2007.
- 3) Johnson, Mathematics: A Practical Odyssey, 8th Edition, Brooks Cole, 2015.
- 4) Scott, Cornerstones of Algebra: Problem Solving, Quantitative Reasoning, and Critical Thinking, 1st Edition, Kendall Hunt Publishing, 2012.
- 5) Sons, Nicholls, and Stephen, *Mathematical Thinking and Quantitative Reasoning*, 5th Edition, Kendall Hunt Publishing, 2012.
- 6) Triola, *Elementary Statistics*, 12th Edition, Pearson, 2012.
- 7) Bluman, *Elementary Statistics: A Step-by-Step Approach*, 9th Edition, McGraw-Hill Education, 2013.
- 8) Larson and Farber, *Elementary Statistics: Picturing the World*, 6th Edition, Pearson, 2014.
- 9) Navidi and Monk, *Elementary Statistics*, 2nd Edition, McGraw-Hill 2015.
- 10) Tussy, *Elementary Algebra*, 5th Edition, Brooks Cole, 2012.
- 11) Bittinger, Ellenborgen and Johnson, *Elementary Algebra*, *Concepts & Applications*, 9th Edition, Pearson, 2012.
- 12) Jacobs, *Elementary Algebra*, Revised Edition, Master Books, 2016.

Revised/Dec.2015/AK